Ricoh 3D

Threaded inserts

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Threaded Inserts

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We are able to add threaded inserts into 3D printed parts where the application requires a higher thread strength than can be achieved through conventional drilling and tapping.

We offer a range of threaded inserts from M3 up to M6 in two different types: straight (Fig 1.0) and flanged (top hat) (Fig 1.1).

The inserts are fixed into the part using heat technology to give a fixing capable of withstanding up to 200Nm of force.

We offer solid brass inserts that are fitted to give as close to a flush finish to the part surface as possible, so long as the guidelines are followed in the design of the insert hole.

NOTE: There will be additional process time required for the fitting of inserts.

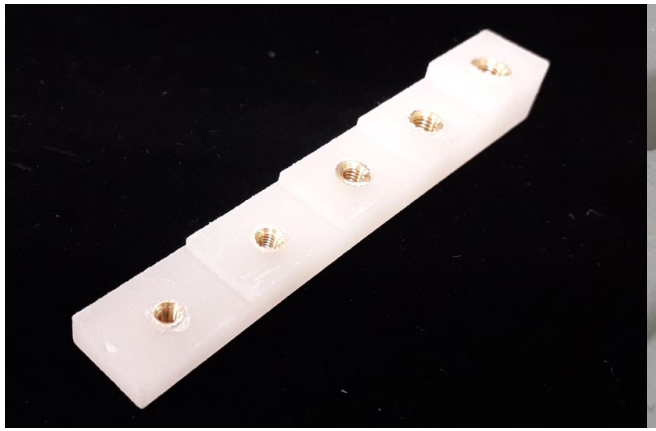

Fig 1.0 – Straight Insert

Fig 1.1 – Flanged Insert

Threaded Inserts – Straight Fit

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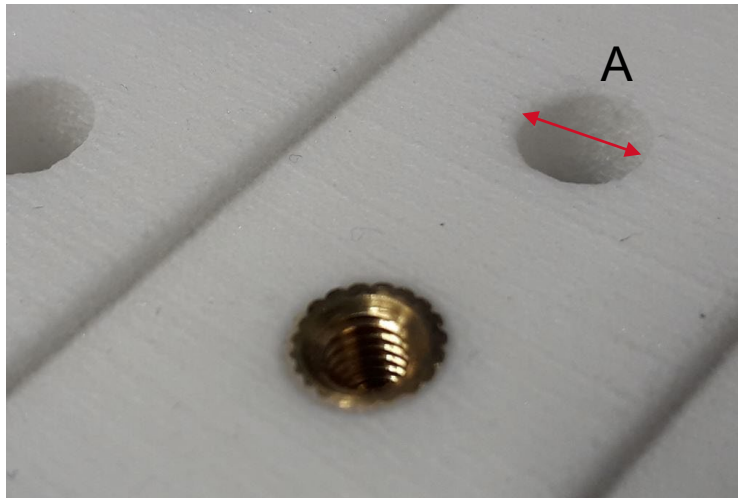
Threaded Insert Design Guide

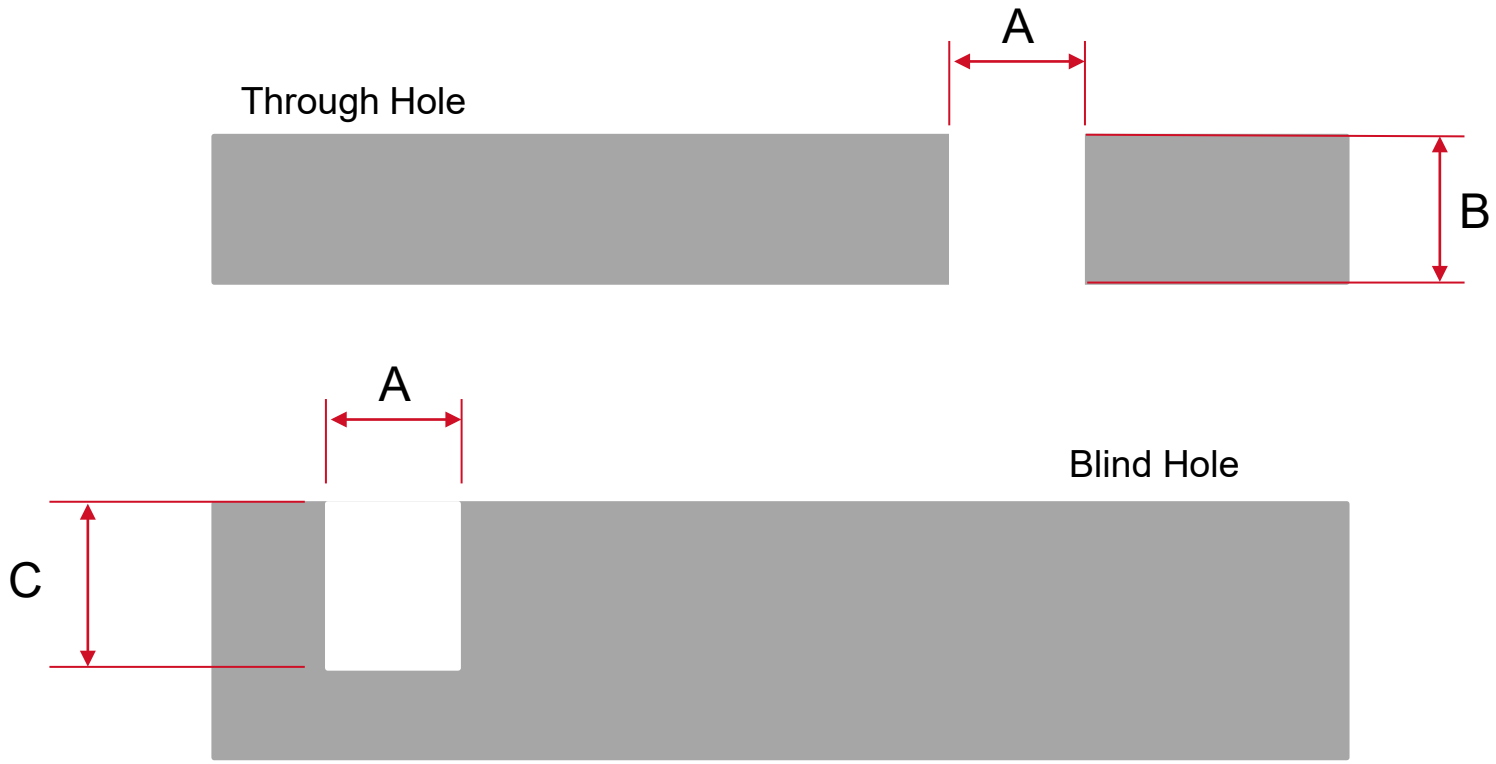
Our engineers have put together some best practice guides to enable you to design your parts so that they are compatible with our processes and inserts.

Threaded Insert Dimensions (mm)			Design Guides (mm)				
Insert Thread Size	Length	Thread Pitch	Hole Diameter	Minimum Through Hole Depth	Minimum Blind Hole Depth	Minimum Boss Diameter	Minimum Wall Thickness W
	L		A	B	C	D	E
M3	4.1	0.5	4	4.1	L + 5mm	7.4	1.7
M3.5	4.1	0.6	4.8	4.1		9.5	2.25
M4	5.6	0.7	5.6	5.6		10.9	2.5
M5	6.6	0.8	6.4	6.6		12.2	2.85
M6	7.7	1	8	7.7		14.6	3.2

Threaded Inserts – Straight Fit

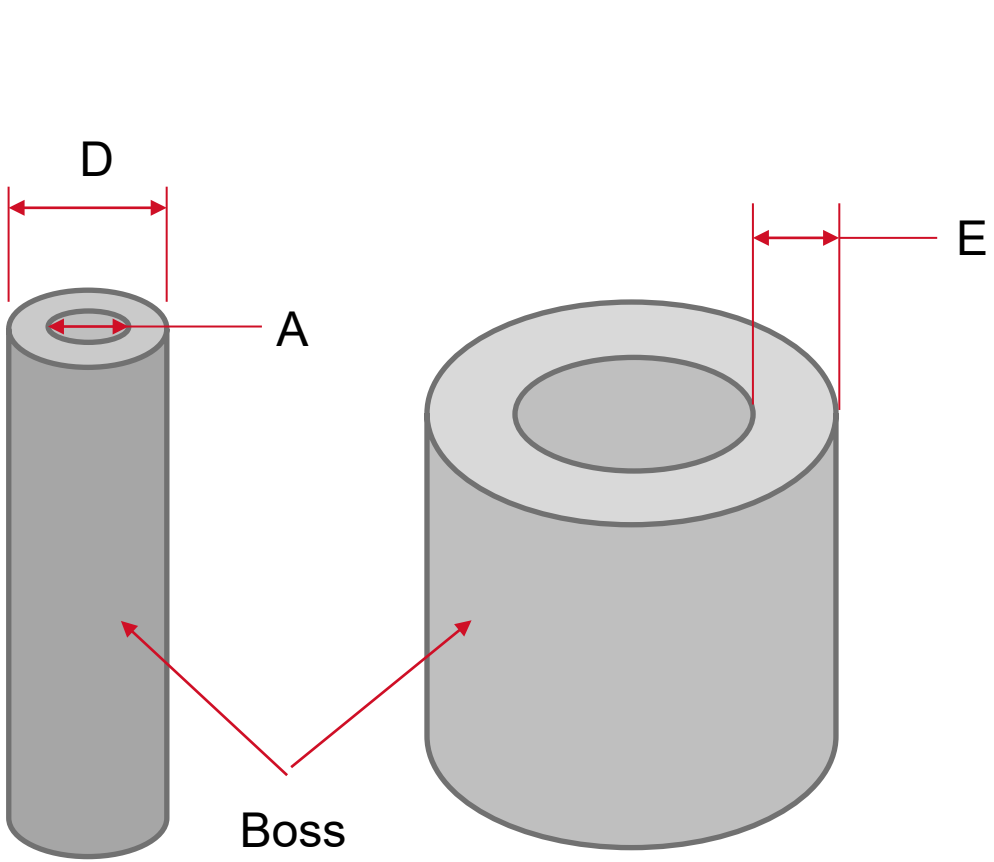
A - This is the hole diameter required for the insert to be fitted successfully
B – This is the minimum depth of a through hole which relates to the length (L) of the insert
C – This is the minimum depth of a blind hole. Note we require an additional 5mm on the depth of the hole compared to the length of the insert (L) due to the melting process of the polymer.

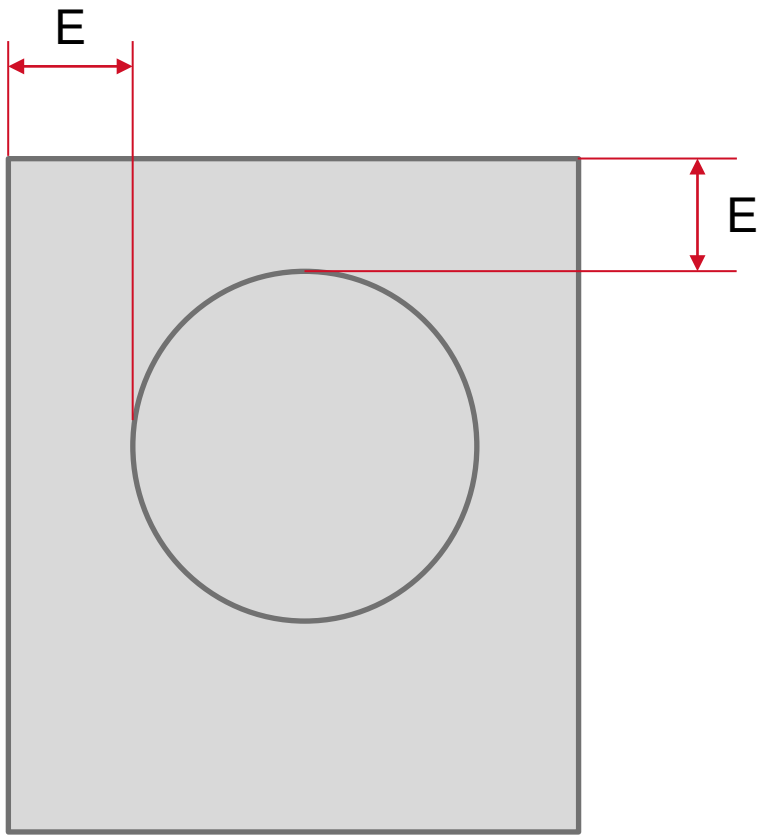




Threaded Inserts – Straight Fit

D – Where an insert is to be assembled into a boss, this is the minimum diameter that the boss should be.
E – This is the minimum wall thickness we recommend to allow all the way around the insert





Threaded Inserts – Straight Fit & Flanged

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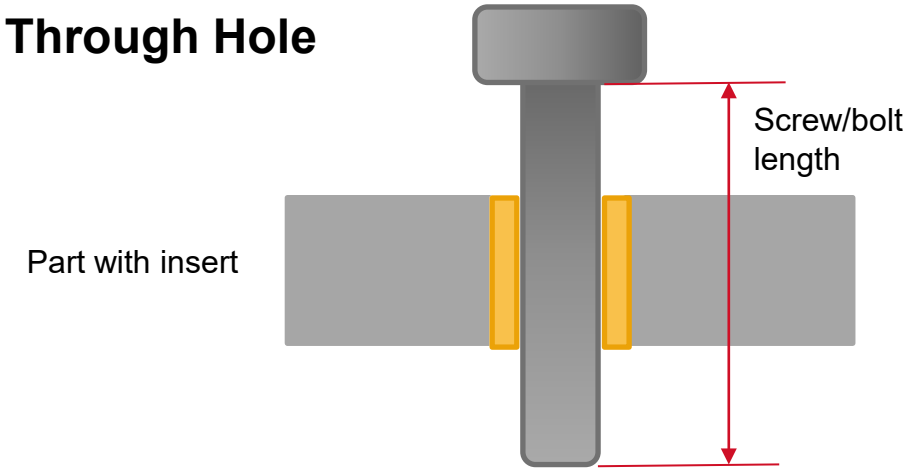
Screw/Bolt Selection

Through Hole: When the screw/bolt is to be assembled into a through hole insert, the screw/bolt length is not restricted by the insert and is dependant on the application.

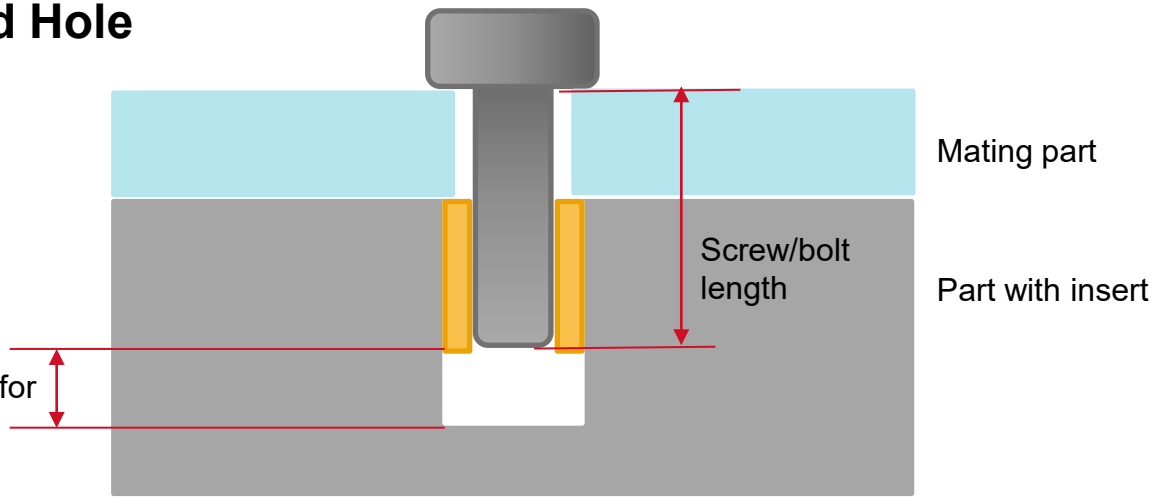
Blind Hole: When the screw/bolt is to be assembled into a blind hole, we advise that the screw/bolt total length is calculated so that it does not pass through the insert when assembled. We cannot guarantee that the hole behind the insert is free from polymer material after the insert assembly process.

Through Hole



Screw/bolt length not restricted by insert. We advise checking overall assembly when selecting the appropriate screw length.

Blind Hole



Screw/bolt length must not exceed past the insert when assembled. Length of screw must be determined by calculating thickness of mating part + insert length (+ additional hardware thickness i.e. washer)

Threaded Inserts – Flanged

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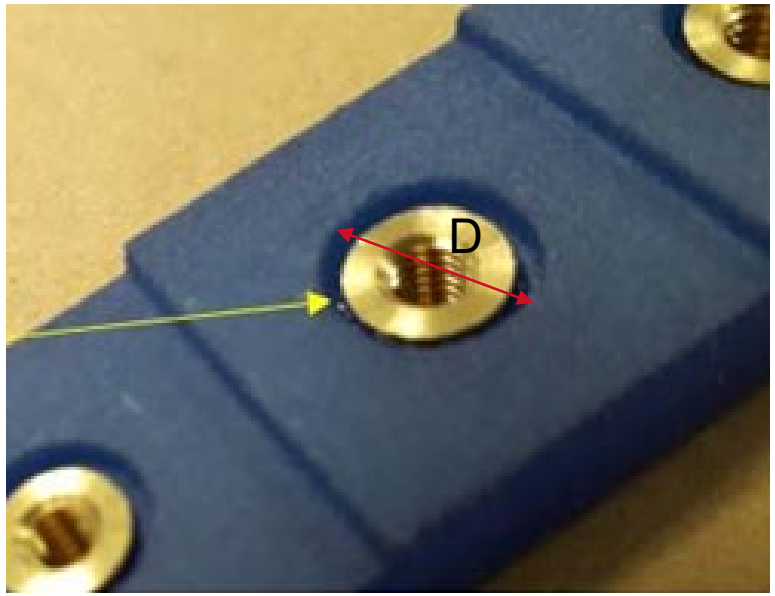
Threaded Insert Design Guide

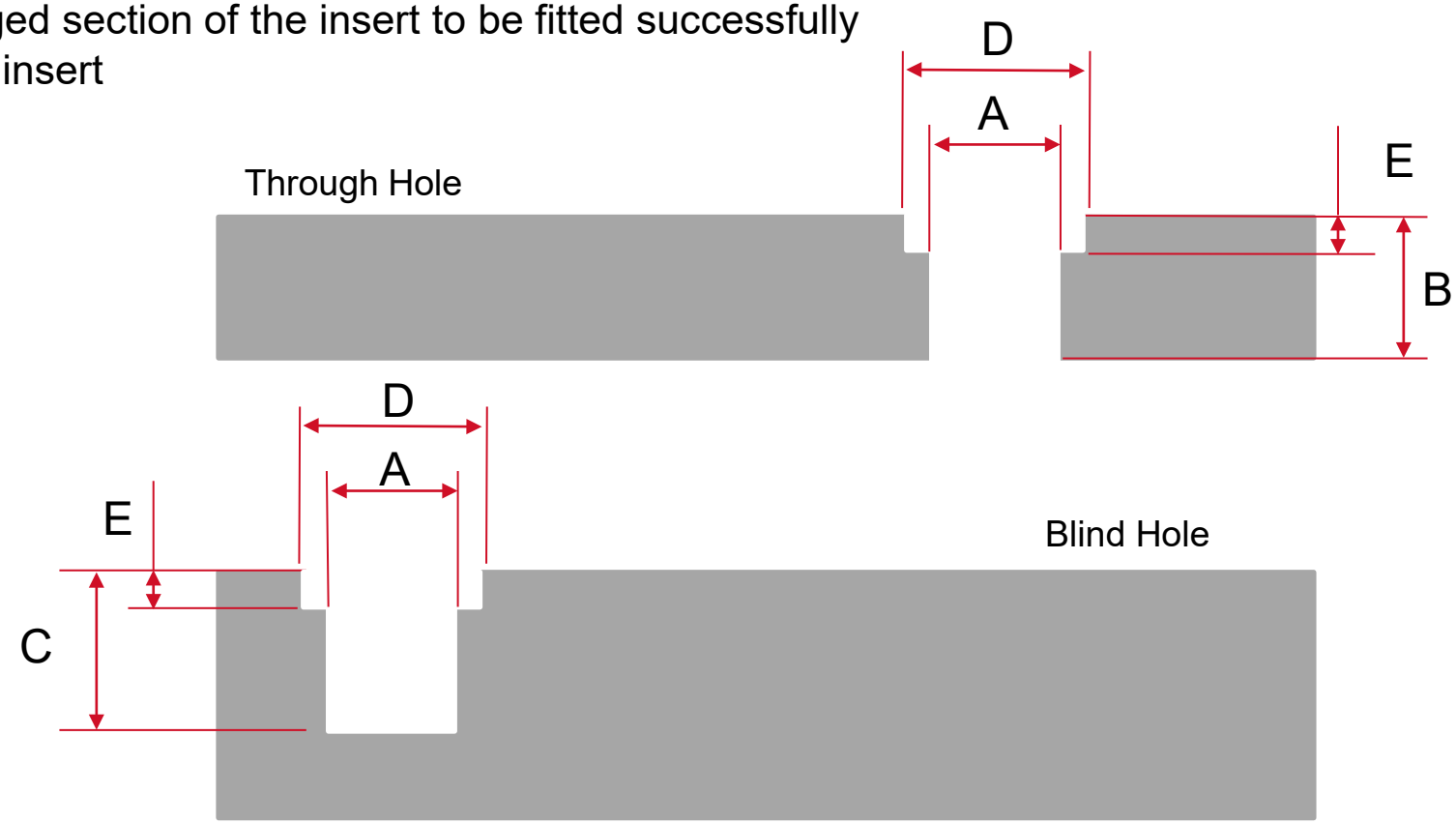
Our engineers have put together some best practice guides to enable you to design your parts so that they are compatible with our processes and inserts.

Threaded Insert Dimensions (mm)			Design Guides (mm)						
Insert Thread Size	Length L	Thread Pitch	Hole Diameter A	Top Hat Boss Diameter F	Top Hat Boss Depth G	Minimum Through Hole Depth B	Minimum Blind Hole Depth C	Minimum Boss Diameter D	Minimum Wall Thickness W E
M3	5.2	0.5	4	7.5	1.25	5.2	L + 5mm	7.4	1.7
M3.5	7	0.6	4.8	8.4	1.25	7		9.5	2.25
M4	8.5	0.7	5.6	9.1	1.25	8.5		10.9	2.5
M5	10.1	0.8	6.4	9.9	1.5	10.1		12.2	2.85
M6	12.3	1	8	11.5	1.8	12.3		14.6	3.2

Threaded Inserts – Flanged

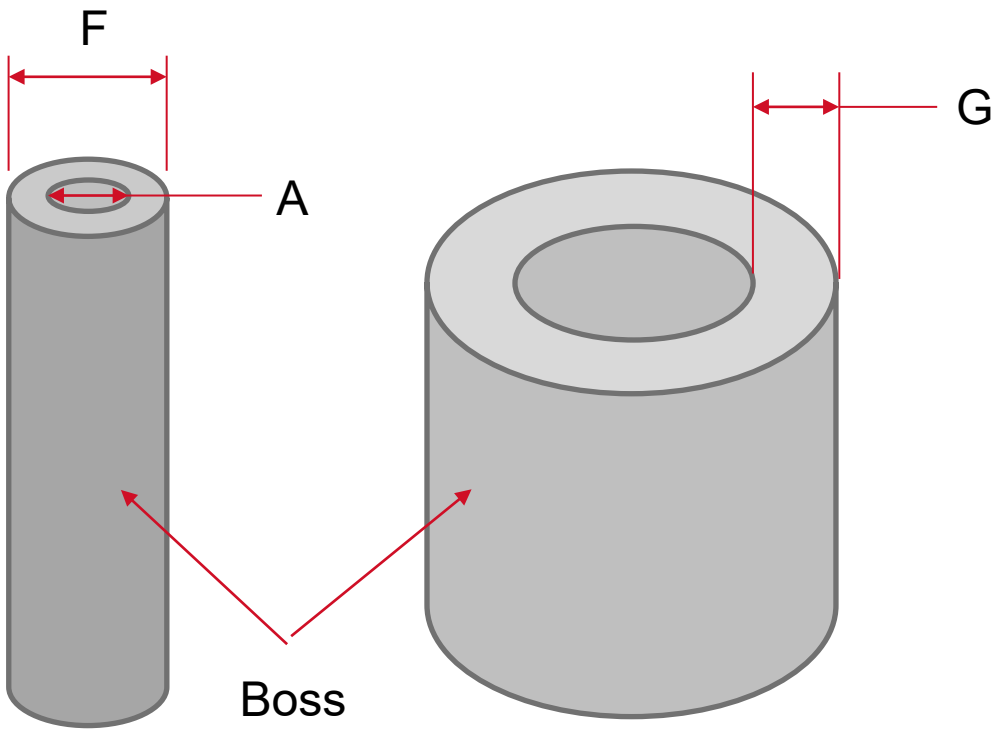
A – This is the hole diameter required for the insert to be fitted successfully
B – This is the minimum depth of a through hole which relates to the length (L) of the insert
C – This is the minimum depth of a blind hole. Note we require an additional 5mm on the depth of the hole compared to the length of the insert (L) due to the melting process of the polymer.
D – This is the diameter required for the Flanged section of the insert to be fitted successfully
E – This is the depth required for the Flanged insert

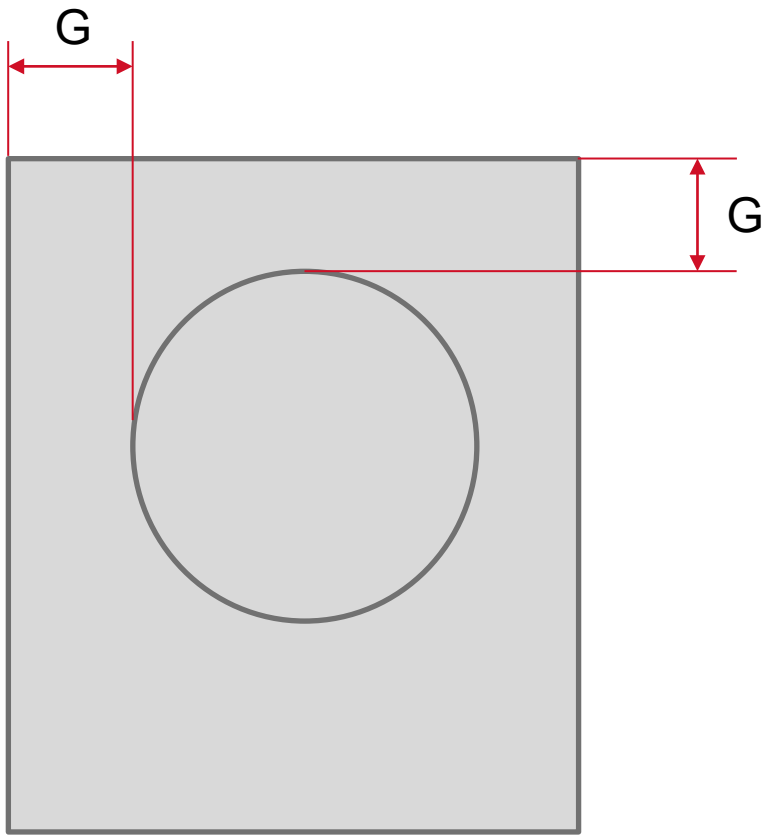




Threaded Inserts – Flanged

F – Where an insert is to be assembled into a boss, this is the minimum diameter that the boss should be.
G – This is the minimum wall thickness we recommend to allow all the way around the insert





Threaded Inserts – Flanged

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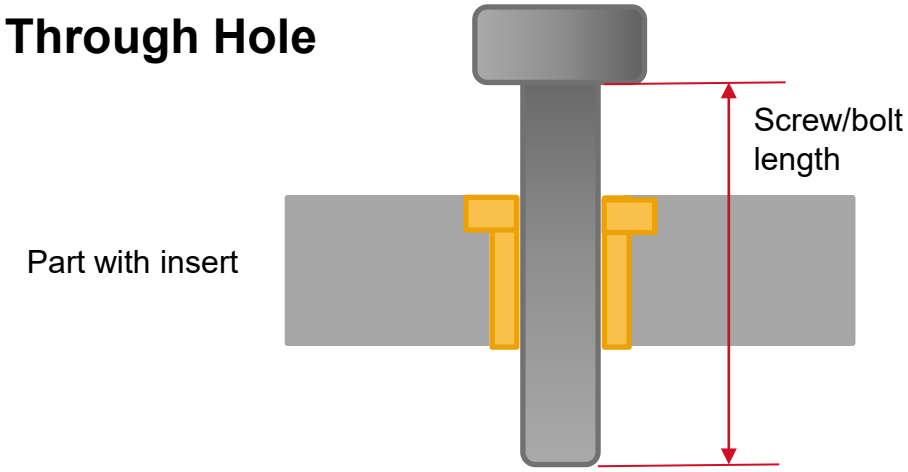
Screw/Bolt Selection

Through Hole: When the screw/bolt is to be assembled into a through hole insert, the screw/bolt length is not restricted by the insert and is dependant on the application.

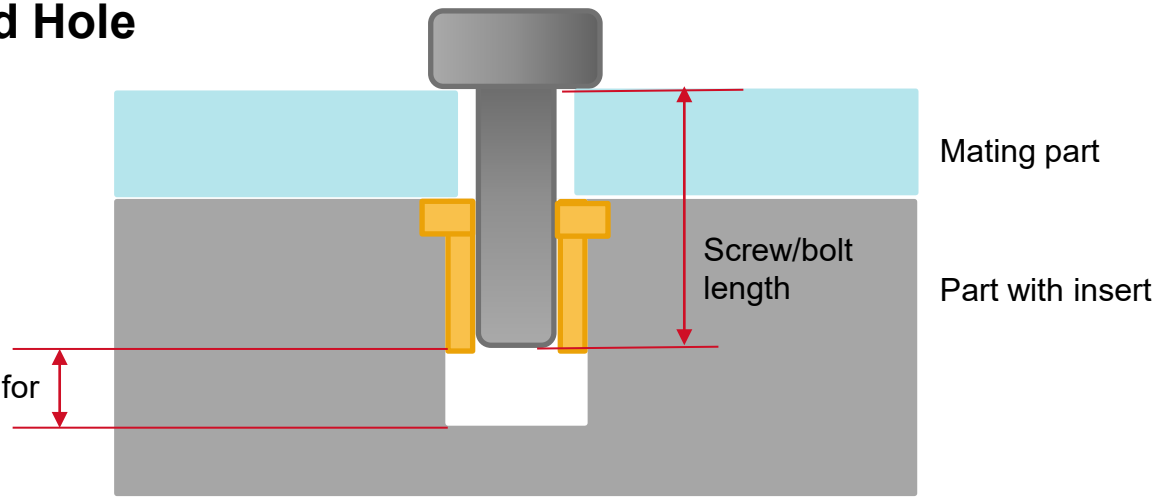
Blind Hole: When the screw/bolt is to be assembled into a blind hole, we advise that the screw/bolt total length is calculated so that it does not pass through the insert when assembled. We cannot guarantee that the hole behind the insert is free from polymer material after the insert assembly process.

Through Hole



Screw/bolt length not restricted by insert. We advise checking overall assembly when selecting the appropriate screw length.

Blind Hole



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